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EXAMINER	
DUDA, ADAM K	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/789,594	SHINOMIYA, NORIHIKO	
	Examiner	Art Unit	
	ADAM DUDA	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 April 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant Argues That:

As will be explained below, at least the features of claim 1 are a distinction over each of Shinomiya and Fujii, and thus over their combination.

The examiner asserted that Shinomiya and Fujii teach the features of claim 1 by Fig. 2 (Shinomiya), Fig. 3 (Fujii) and the following description:

"For example, FIG. 2 shows the alternate communication route and the transfer time of failure message transfer time. In FIG. 2-A, an alternate communication route 22 against <u>a failure 21 on the working communication route</u> is shown. Also, in FIG. 2-B, a protecting route 23 against failure 21 is shown." (Shinomiya, column 4, lines 40-45; <u>underlining</u> added for emphasis)

"When a failure occurs in a link or a node, the nodes adjacent to the source of the failure detect OTS-LOC at optical transmission section termination and send back a OTS-BDI to upstream nodes. <u>The detection of OTS-LOC or OTS-BDI acts as a trigger for the restoration process,</u> and an alternative route-search phase begins.

...

<u>The node that starts the restoration process is called sender node, whereas the destination node for establishing the alternate path is called chooser</u> node."

(Fujii, Section 3.4.1 on page 1030; <u>underlining</u> added for emphasis)

Examiner Respectfully Disagrees:

Applicant makes it appear as if the cited portions are the only portions cited by the examiner to reject claim 1. The examiner has cited more than col. 4 lines 40-45 of Shinomiya and section 3.4.1 on page 1030 of Fuji in respect to claim 1. Furthermore, the examiner is confused as to the purpose of the citations by applicant in the remarks. Applicant's arguments are irrelevant.

Applicant Argues That:

However, Shinomiya and Fujii fail to disclose or teach the features of claim 1'

"assuming that a network failure occurs at a location in a current communication path, the current communication path being a single path connecting a plurality of path network nodes in a row, the path network nodes being nodes included in the network nodes, the path network nodes being divided into first path network nodes and second path network nodes, the first path network nodes being nodes that are located on upper stream of the current communication path from the location of the network failure, and the second path network nodes being nodes that are located on down stream of the current communication path from the location of the network failure;

selecting a first network node based on the failure notification time, out of the first path network nodes that are positioned in the current communication path on the upper stream from the location of the network failure; and

determining an alternative communication path that includes the first network node and a second network node out of the second path network nodes, the second network node being positioned in the current communication path on the down stream from the location of the network failure."

(underlining added for emphasis)

Examiner Respectfully Disagrees:

Applicant merely states that Shinomiya nd Fuji fail to disclose features of claim 1 without distinguishing the features of claim 1 from the features of the cited portions of Shinomiya and Fuji. Furthermore, applicant doesn't provide any reasoning or arguments but merely states that either Shinomiya states A, Fuji states B, claims G-H claim Features not disclosed by Shinomiya or Fuji. Again, applicant does not provide any reasoning or arguments that tie the portions cited by the examiner of Shinomiya and Fuji that distinguish the instant claims. Applicant's arguments are irrelevant.

Applicant Argues That:

The examiner also asserted that Fujii teaches a feature of claim 1 by the following description:

"Our method for spare capacity assignment assumes that the restoration algorithm selects in the case of a failure the route requiring the shortest time and assigns spare capacity to that route by using a process graph like the working path allocation."

(Fujii, Section 4 on page 1032; underlining added for emphasis)
However, Fujii fails to disclose or teach the feature of claim 1: "calculating a failure notification time for each network node, the failure notification time indicating a time from when a failure notification message is transmitted by the failure detected network node until the each network node receives the failure notification message..."
(underlining added for emphasis)
Examiner Respectfully Agrees:

Applicant has not provided a reason why the cited portions of Fuji do not discloses the "a feature" of claim 1. Examiner is again confused why applicant merely states that the examiner "asserted" without providing a reasoning or an argument on why the features of the instant claims are distinguishing from the cited prior art. Applicant's arguments are irrelevant.

Response to Amendment

1. Applicant's arguments filed 9/30/2008 have been fully considered but they are not persuasive.

2. Applicant has amended Independent claims 1, 7, and 13. The independent claims had the same limitation amended:

selecting a first network node based on the failure notification time, out of the network nodes ~~based on the failure notification time, the first network node being~~ that are positioned

in the current communication path on upper stream from the location of the network failure; and

The amended limitations changed the scope of the claim.

Before the amendments the limitation stated:

"the first network node being position in the current communication path"

Thus the first network node is/was positioned in the current communication path.

"selecting a first network node out of the network nodes based on the failure notification time, the first network node being positioned in the current communication path on upper stream from the location of the network failure"

After the amendments the limitation stated:

"network nodes that are position in the current communication path"

Thus network nodes are/were positioned in the current communication path

"selecting a first network node based on the first notification time, out of the network nodes that are positioned in the current communication path on upper stream from the location of the network failure"

Please see "Response to Arguments" to see how the combination of Shinomiya and Fuji disclose the limitations of the above amended limitation and the arguments set forth in the "REMARKS" mailed on 9/30/2008.

Response to Arguments

Applicant Argues that:

The Examiner contends that the first network node is "chooser node" and Fujii discloses the above feature of claims 1, 7 and 13 on page 1030, section 3.4.1 and in Figure 3. However, Fujii merely discloses therein that the node that starts the restoration process is called sender node, whereas the destination node for establishing the alternate path is called chooser node, and chooser candidate nodes are adjacent node and the node after the adjacent node for each path.

Examiner Respectfully disagrees:

Applicant references section "3.4.1 ALTERNATIVE ROUTE-SEARCH PHASE" which states that "the node that starts the restoration process is called sender node" therefore the sender node start the restoration process and is not a selected first node. The chooser node, as stated in section 3.4.1, is "the destination node for establishing the alternate path". Furthermore, figure 3 shows that there are multiple candidates for a "chooser node". In section 3.4.2 Fuji states "After a route-selection message reaches one of the choose candidate nodes, that node becomes a chooser node and starts the alternative route-reservation and cancellation phase". Therefore, "a chooser node" is selected out of a plurality of "chooser nodes" thus meeting the limitation of "selecting a first node" and the limitation of "a node selecting unit".

Fuji also discloses on page 1032 that "Our method for spare capacity assignment assumes that the restoration algorithm selects in the case of a failure the route requiring

the shortest time" therefore disclosing the limitation of" based on the failure notification time". Next, Fuji also discloses, based on figure 3 and section 3.4.2 that the chooser node is selected out of a plurality of network nodes. Based on figure 3 the chooser node are in the communication path therefore disclosing the limitation of "that are position in the communication path". Section 3.4.1 of Fuji discloses "upstream" sending the "OTSBDI" which "acts as a trigger for the restoration path" for the "chooser node" therefore the "chooser node" is located upstream from the location of the network failure. Therefore, the combination of Shinomiya and Fuji teach the limitation of Independent Claims 1, 7 and 13. Applicant's argument is irrelevant.

Furthermore, applicant is reminded that:

3. The patent and Trademark Office ("PTO") determines the scope of claim in patent applications not solely on the basis of the claim language, but upon giving the claims their broadest reasonable construction "<u>in light of</u> the specification as it would be interpreted by one of ordinary skill in the art." In re Am. Acad. Of Sci. Tech. Ctr., 367 F.3d 1359, 1364[, 70 USPQ2d 1827] (Fed. Cir. 2004).

4. The Patent and Trademark Office ("PTO") is not required, in the course of prosecution, to interpret claims in applications in the same manner as a court would interpret claims in an infringement suit. Rather, the "PTO applies to verbiage of the proposed claims the <u>broadest reasonable meaning</u> of the words in their ordinary usage

as they would be understood by one of ordinary skill in the art, taking into account whether enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant's specification.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-6, 7-12, and 13-18 rejected under 35 U.S.C. 103(a) as being unpatentable over **Shinomiya (US 2002/0138645 A1)**, and in view of **Fujii ("Management of WDM self-healing networks")**.

Shinomiya discloses:

Regarding claim 1, a method of determining an alternative communication path **(i.e. having a protecting communication path; see Shinomiya; abstract; "protecting route")** in a communication network **(see Shinomiya; abstract; "communication network")** built with a plurality of network nodes **(see Shinomiya; figure 1; plurality of node")**, comprising: assuming that a network failure occurs **(see Shinomiya; col. 4 lines 40-45; "failure 21")** at a location in a

current communication path **(see Shinomiya; figure 2; "failure 21" occurs on "working communication router")** through the network nodes ~~(see Shinomiya; figure 2; "working communication path" is composed through network nodes)~~ the current communication path connecting a plurality of path network nodes in a row **(see Shinomiya; figure 1; plurality of path network nodes (nodes 1->17->10->12->13->14->2) connected in a row)**, the path network nodes being nodes included in the network nodes **(see Shinomiya; the path nodes are included in the plurality of nodes)**, the path network nodes being divided into first path network nodes and second path network nodes **(see Shinomiya; figure 1; the "Failure 11" divides the nodes into a first path network nodes and second path network nodes – i.e. and upstream group and a downstream group of nodes)**, the first path network nodes being nodes that are located on upper stream of the current communication path from the location of the network failure **(see Shinomiya; figure 1; nodes "12, 13, 14 and 2" are located upstream of "Failure 11")**, and the second path network nodes being nodes that are located on down stream of the current communication path from the location of the network failure **(see Shinomiya; figure 1; nodes "1, 17, and 10" are located downstream of "Failure 11")**; determining a failure **(see Shinomiya; col. 4 lines 46-51; "information on failure 21 is transmitted through a failure notification message 25")** detected network node **(see Shinomiya; figure 2; "failure 21" has a "failure detection node 24")** that detects the network failure **(see Shinomiya; figure 2; "failure detection node**

24", thus a node that detects the network failure"), out of the path network nodes **(see Shinomiya; figure 2; "failure detection node 24" <u>is part of the "working communication path" nodes</u>)**; calculating **(see Shinomiya; col. 2 lines 25-38; "calculated")** a failure notification time **(see Shinomiya; col. 2 lines 31-37; "summation of the transfer time of a failure notification message")** for each network node **(see Shinomiya; col. 2 lines 31-37; "to each node")**, the failure notification time **(see Shinomiya; col. 7 line 27-34; "failure notification time")** indicating a time **(see Shinomiya; col. 7 line 27-34; "time", thus indicating a time)** from when a failure notification message is transmitted **(see Shinomiya; col. 7 lines 27-34; "transmitting a failure notification message")** by the failure detected network node **(see Shinomiya; col. 7 lines 27-34; "transmitting a failure notification message from the failure detection node")** until the each network node receives the failure notification message **(see Shinomiya; col. 7 lines 27-45; "to respective nodes", thus each network node; figure 9; shows message being forwarded through all network nodes by being forwarded in multiple directions)**;

Regarding claim 2, wherein the failure notification time **(see Shinomiya; paragraph 106; "failure notification time")** of the network node is the shortest **(see Shinomiya; paragraph 106; "shortest reception time of a failure notification message")** of the network nodes that are positioned on upper stream from the location of the network failure **(see Shinomiya; figure 4 in combination with figure 10; figure 10 shows ""reception time of failure**

notification message" which is greater for the downstream nodes (nodes 5 and 1 with 10ms and 8.75 ms, respectively) in comparison to the upstream nodes (nodes 4 and 2 with 4.50 ms and 3.25 ms, respectively)).

Regarding claim 3, wherein the failure notification time **(see Shinomiya; paragraph 0106; "failure notification")** of the node is smaller than a predetermined time **(see Shinomiya; paragraph 0106; figure 10; In FIG. 10, there are shown a failure location 61; a node 62 which can detect this failure; an upper limit value 63 of the restoration time which was specified by the user; the shortest reception time 64 of a failure notification message calculate from both a message transmission delay in a communication link)**.

Regarding claim 4, wherein the alternative communication path **(see Shinomiya; "protecting route having a spare communication capacity")** allows to share an auxiliary communication capacity for other network failure **(see Shinomiya; abstract; "The protecting route design method includes the steps of searching a protecting route which can minimize a transfer time of the failure notification message from the failure detection node; and then, updating the searched protecting route to a protecting route having a spare communication capacity sharable for a different failure and having a route switchover time to be ocmpleted within a given time limit")**.

Regarding claim 5, wherein the failure notification time **(i.e. transfer time of the failure notification message; see Shinomiya; paragraph 0011; "the**

transfer time of the failure notification message from the failure detection node") is calculated **(see Shinomiya; paragraph 0011; "is calculated")** as a sum **(see Shinomiya; paragraph 011; "from a summation")** of a propagation delay time of a communication link between the network nodes **(i.e. transmission delay time; see Shinomiya; paragraph 011; "transmission delay time of the failure notification message being transmitted on communication links")** and a processing time **(see Shinomiya; paragraph 0011; "processing time")** inputting/outputting the failure notification message in the each network node **(see Shinomiya; paragraph 0011; "an input and output processing time of the failure notification message processed in each node")**.

Regarding claim 6, further comprising calculating a recovery time **(see Shinomiya; paragraph 0043; "switchover time")** of the communication path **(see Shinomiya; "communication route switchover")** as a sum of the failure notification time of the first network node **(see Shinomiya; paragraph 0106; "shortest reception time 64 of the failure notification message")**, a switching time of each network node on the alternative communication path **(see Shinomiya; paragraph 0196; "restoration time")**, and a propagation delay of a signal to be transferred **(see Shinomiya; paragraph 0120; propagation delay is comprised in the "failure notification message")**.

Shinomiya is silent regarding:

Regarding claim 1, selecting a first network node based on the failure notification time, out of the first path network nodes that are positioned in the current communication path on the upper stream from the location of the network failure; and determining an alternative communication path that includes the first network node and a second network node out of the second path network nodes, the second network node being positioned in the current communication path on the down stream from the location of the network failure.

Regarding claim 2, a "first network node".

Regarding claim 3, a "first network node".

Fuji is not silent regarding:

Regarding claim 1, selecting a first network node **(see Fujii; "3.4.1 Alternate Route-Search Phase"; "chooser node")** based on the failure notification time **(see Fujii; page 1032 "Integrated Network Design Method"; "Our method for spare capacity assignment assumes that the restoration algorithm selects in the case of a failure a route requiring the shorts time", thus shortest failure notification time)**, out of the first path network nodes **(see Fujii; figure 3; chooser node is selected out of a plurality of network nodes)** that are positioned in the current communication path **(see Fujii; figure 3; chooser node is in the communication path, thus positioned in a communication path)** on the upper stream **(see Fujii; page 1030 "3.4.1 Alternate Route-Search Phase", "upstream" sending the "OTS-BDI" which "acts as a trigger for the restoration path" for the "chooser node", thus**

"chooser node" is located upstream) from the location of the network failure **(see Fujii; figure 3; the sender node sends the "OTS-BDI" message and is located downstream of the "chooser node" which is located upstream of the "sender node")** and determining an alternative communication path **(see Fujii; page 1030 "3.4.1 Alternate Route Search Phase"; "the destination node for establishing the alternate path is called chooser node")** that includes the first network node **(see Fujii; figure 3; page 1030 "3.4.1 Alternate Route Search Phase"; first node is "chooser node")** and a second network node **(see Fujii; figure 3; page 1030 "3.4.1 Alternate Route Search Phase"; second node is "sender node")** out of the <u>second path</u> network nodes **(see Fujii; figure 3; the chooser and sender nodes are selected out of a plurality of nodes)**, the second network node **(see Fujii; figure 3; "sender node")** being positioned in the current communication path **(see Fujii; figure 3; "sender node" is on communication path)** on <u>the</u> down stream from the location of the network failure **(see Fujii; figure 3; the sender node sends the "OTS-BDI" message and is located downstream of the "chooser node" which is located upstream of the "sender node", therefore sender node is located "downstream")**.

Regarding claim 2; a "first network node" **(see Fujii; figure 3; "3.4.1 Alternate Route-Search Phase"; "chooser node" is selected out of a plurality of network nodes)**

Regarding claim 3; a "first network node" (see Fujii; figure 3; "3.4.1 Alternate Route-Search Phase"; "chooser node" is selected out of a plurality of network nodes)

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Shinomiya, as taught by **Fuji**, thereby addressing issues to the restoration function **(see Fuji; abstract)** as the sturdiness of WDM networks is an important factors, since WDM networks carry a large amount of information and a network failure would cause severe damage **(see Fuji; page 1028 "1. Introduction")**.

Shinomiya discloses:

Regarding claim 7, an apparatus for determining an alternative communication path **(i.e. having a protecting communication path; see Shinomiya; abstract; “protecting route”)** in a communication network **(see Shinomiya; abstract; “communication network”)** built with a plurality of network nodes **(see Shinomiya; figure 1; plurality of node”)**, comprising: a node selecting unit that determines a failure detected network node that detects a network failure that is assumed **(i.e. assuming that a network failure occurs; see Shinomiya; paragraph 0046; "failure 21", thus using a unit that detects the failure)** to occur at a location in a current communication path **(see Shinomiya; figure 2; “failure 21” occurs on “working communication router”)** ~~through the network nodes (see Shinomiya; figure 2; “working communication path” is composed through network nodes)~~ the current communication path connecting a plurality of path network nodes in a row **(see Shinomiya; figure 1; plurality of path network nodes (nodes 1->17->10->12->13->14->2) connected in a row)**, the path network nodes being nodes included in the network nodes **(see Shinomiya; the path nodes are included in the plurality of nodes)**, the path network nodes being divided into first path network nodes and second path network nodes **(see Shinomiya; figure 1; the “Failure 11” divides the nodes into a first path network nodes and second path network nodes – i.e. and upstream group and a downstream group of nodes)**, the first path network nodes being nodes that are located on upper

stream of the current communication path from the location of the network failure **(see Shinomiya; figure 1; nodes "12, 13, 14 and 2" are located upstream of "Failure 11")**, and the second path network nodes being nodes that are located on down stream of the current communication path from the location of the network failure **(see Shinomiya; figure 1; nodes "1, 17, and 10" are located downstream of "Failure 11")**, out of the path network nodes **(see Shinomiya; figure 2; "working communication path" is composed through network nodes and failure occurs out of the network nodes at a node)**, calculates **(see Shinomiya; paragraph 0012; paragraph 0013; "calculated")** a failure notification time **(see Shinomiya; paragraph 0012; paragraph 0013; "summation of the transfer time of a failure notification message")** for each network node **(see Shinomiya; paragraph 0012; paragraph 0013; "to each node")**, the failure notification time **(see Shinomiya; paragraph 0085; "failure notification time")** indicating a time **(see Shinomiya; paragraph 0085; "time", thus indicating a time)** from when a failure notification message is transmitted **(see Shinomiya; paragraph 0085; "transmitting a failure notification message")** by the failure detected network node **(see Shinomiya; paragraph 0085; "transmitting a failure notification message from the failure detection node")** until the each network node receives the failure notification message **(see Shinomiya; paragraph 0085; paragraph 0086; paragraph 0087; "to respective nodes", thus each network node; figure 9; shows message**

being forwarded through all network nodes by being forwarded in multiple directions)

Regarding claim 8, wherein the failure notification time **(see Shinomiya; paragraph 106; "failure notification time")** of the network node **(see Shinomiya; paragraph 106; "shortest reception time of a failure notification message")** is the shortest of the network nodes that are positioned on upper stream from the location of the network failure **(see Shinomiya; figure 4 in combination with figure 10; figure 10 shows “”reception time of failure notification message” which is greater for the downstream nodes (nodes 5 and 1 with 10ms and 8.75 ms, respectively) in comparison to the upstream nodes (nodes 4 and 2 with 4.50 ms and 3.25 ms, respectively))**.

Regarding claim 9, wherein the failure notification time **(see Shinomiya; paragraph 0106; "failure notification")** of the network node is smaller than a predetermined time **(see Shinomiya; paragraph 0106; figure 10; In FIG. 10, there are shown a failure location 61; a node 62 which can detect this failure; an upper limit value 63 of the restoration time which was specified by the user; the shortest reception time 64 of a failure notification message calculate from both a message transmission delay in a communication link)**.

Regarding claim 10, wherein the alternative communication path **(see Shinomiya; “protecting route having a spare communication capacity”)** allows to share an auxiliary communication capacity for other network failure

(see Shinomiya; abstract; "The protecting route design method includes the steps of searching a protecting route which can minimize a transfer time of the failure notification message from the failure detection node; and then, updating the searched protecting route to a protecting route having a spare communication capacity sharable for a different failure and having a route switchover time to be completed within a given time limit").

Regarding claim 11, wherein the failure notification time **(i.e. transfer time of the failure notification message; see Shinomiya; paragraph 0011; "the transfer time of the failure notification message from the failure detection node")** is calculated **(see Shinomiya; paragraph 0011; "is calculated")** as a sum **(see Shinomiya; paragraph 011; "from a summation")** of a propagation delay time of a communication link between the network nodes **(i.e. transmission delay time; see Shinomiya; paragraph 011; "transmission delay time of the failure notification message being transmitted on communication links")** and a processing time **(see Shinomiya; paragraph 0011; "processing time")** for inputting/outputting the failure notification message in the each network node **(see Shinomiya; paragraph 0011; "an input and output processing time of the failure notification message processed in each node")**.

Regarding claim 12, further comprising a calculating unit that calculates a recovery time **(see Shinomiya; paragraph 0043; "switchover time", thus a unit that calculates the recovery time)** of the communication path **(see**

Shinomiya; "communication route switchover") as a sum of the failure notification time of the first network node **(see Shinomiya; paragraph 0106; "shortest reception time 64 of the failure notification message")**, a switching time of each network node on the alternative communication path **(see Shinomiya; paragraph 0196; "restoration time")**, and a propagation delay of a signal to be transferred **(see Shinomiya; paragraph 0120; propagation delay is comprised in the "failure notification message")**.

Shinomiya is silent regarding:

Regarding claim 7, selecting a first network node based on the failure notification time, out of the first path network nodes that are positioned in the current communication path on the upper stream from the location of the network failure; and a path searching unit that determines an alternative communication path that includes the first network node and a second network node out of the second path network nodes, the second network node being positioned in the current communication path on the down stream from the location of the network failure.

Regarding claim 8, a "first network node".

Regarding claim 9, a "first network node".

Fuji is not silent regarding:

Regarding claim 7, selecting a first network node (see Fujii; "3.4.1 Alternate Route-Search Phase"; "chooser node") based on the failure notification time **(see Fujii; page 1032 "Integrated Network Design**

Method";"Out method for spare capacity assignment assumes that the restoration algorithm selects in the case of a failure a route requiring the shorts time", thus shortest failure notification time), out of the first path network nodes (see Fujii; figure 3; chooser node is selected out of a plurality of network nodes) that are positioned in the current communication path (see Fujii; figure 3; chooser node is in the communication path, thus positioned in a communication path) on the upper stream (see Fujii; page 1030 "3.4.1 Alternate Route-Search Phase", "upstream" sending the "OTS-BDI" which "acts as a trigger for the restoration path" for the "chooser node", thus "chooser node" is located upstream) from the location of the network failure (see Fujii; figure 3; the sender node sends the "OTS-BDI" message and is located downstream of the "chooser node" which is located upstream of the "sender node"); and a path searching unit that determines an alternative communication path (see Fujii; page 1030 "3.4.1 Alternate Route Search Phase"; "the destination node for establishing the alternate path is called chooser node", thususing a path searching unit) that includes the first network node (see Fujii; figure 3; page 1030 "3.4.1 Alternate Route Search Phase"; first node is "chooser node") and a second network node (see Fujii; figure 3; page 1030 "3.4.1 Alternate Route Search Phase"; second node is "sender node") out of the second path network nodes (see Fujii; figure 3; the chooser and sender nodes are selected out of a plurality of nodes), the second network node (see Fujii; figure 3; "sender node") being positioned in

the current communication path (see Fujii; figure 3; "sender node" is on communication path) on the down stream from the location of the network failure (see Fujii; figure 3; the sender node sends the "OTS-BDI" message and is located downstream of the "chooser node" which is located upstream of the "sender node", therefore sender node is located "downstream").

Regarding claim 8; a "first network node" (see Fujii; figure 3; "3.4.1 Alternate Route-Search Phase"; "chooser node" is selected out of a plurality of network nodes)

Regarding claim 9; a "first network node" (see Fujii; figure 3; "3.4.1 Alternate Route-Search Phase"; "chooser node" is selected out of a plurality of network nodes)

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Shinomiya, as taught by **Fuji**, thereby addressing issues to the restoration function **(see Fuji; abstract)** as the sturdiness of WDM networks is an important factors, since WDM networks carry a large amount of information and a network failure would cause severe damage **(see Fuji; page 1028 "1. Introduction")**.

Shinomiya discloses:

Regarding claim 13, a computer program product for realizing a method **(see Shinomiya; abstract; method performed on digital hardware, thus performing a method using instructions embedded in a computer readable medium)** of determining an alternative communication path **(i.e. having a protecting communication path; see Shinomiya; abstract; "protecting route")** in a communication network **(see Shinomiya; abstract; "communication network")** built with a plurality of network nodes **(see Shinomiya; figure 1; plurality of node")**, including computer executable instructions stored on a computer readable medium, wherein the instructions, when executed by the computer **(see Shinomiya; abstract; method performed on digital hardware, thus performing a method using instructions embedded in a computer readable medium)**, cause the computer to perform: assuming that a network failure occurs **(see Shinomiya; col. 4 lines 40-45; "failure 21")** at a location in a current communication path **(see Shinomiya; figure 2; "failure 21" occurs on "working communication router")** ~~through the network nodes (see Shinomiya; figure 2; "working communication path" is composed through network nodes)~~ the current communication path being a single path connecting a plurality of path network nodes in a row **(see Shinomiya; figure 1; plurality of path network nodes (nodes 1->17->10->12->13->14->2) connected in a row)**, the path network nodes being nodes included in the network nodes **(see Shinomiya; the path nodes are included in**

the plurality of nodes), the path network nodes being divided into first path network nodes and second path network nodes **(see Shinomiya; figure 1; the "Failure 11" divides the nodes into a first path network nodes and second path network nodes – i.e. and upstream group and a downstream group of nodes)**, the first path network nodes being nodes that are located on uppear stream of the current communication path from the location of the network failure **(see Shinomiya; figure 1; nodes "12, 13, 14 and 2" are located upstream of "Failure 11")**, and the second path network nodes being nodes that are located on down stream of the current communication path from the location of the network failure **(see Shinomiya; figure 1; nodes "1, 17, and 10" are located downstream of "Failure 11")**; determining a failure **(see Shinomiya; col. 4 lines 46-51; "information on failure 21 is transmitted through a failure notification message 25")** detected network node **(see Shinomiya; figure 2; "failure 21" has a "failure detection node 24")** that detects the network failure **(see Shinomiya; figure 2; "failure detection node 24", thus a node that detects the network failure")**, out of the path network nodes **(see Shinomiya; figure 2; "failure detection node 24" is part of the "working communication path" nodes)**; calculating **(see Shinomiya; col. 2 lines 25-38; "calculated")** a failure notification time **(see Shinomiya; col. 2 lines 31-37; "summation of the transfer time of a failure notification message")** for each network node **(see Shinomiya; col. 2 lines 31-37; "to each node")**, the failure notification time **(see Shinomiya; col. 7 line 27-34; "failure notification time")** indicating a time

(see Shinomiya; col. 7 line 27-34; "time", thus indicating a time) from when a failure notification message is transmitted **(see Shinomiya; col. 7 lines 27-34; "transmitting a failure notification message")** by the failure detected network node **(see Shinomiya; col. 7 lines 27-34; "transmitting a failure notification message from the failure detection node")** until the each network node receives the failure notification message **(see Shinomiya; col. 7 lines 27-45; "to respective nodes", thus each network node; figure 9; shows message being forwarded through all network nodes by being forwarded in multiple directions)**;

Regarding claim14, wherein the failure notification time **(see Shinomiya; paragraph 106; "failure notification time")** of the network node is the shortest **(see Shinomiya; paragraph 106; "shortest reception time of a failure notification message")** of the network nodes that are positioned on upper stream from the location of the network failure **(see Shinomiya; figure 4 in combination with figure 10; figure 10 shows ""reception time of failure notification message" which is greater for the downstream nodes (nodes 5 and 1 with 10ms and 8.75 ms, respectively) in comparison to the upstream nodes (nodes 4 and 2 with 4.50 ms and 3.25 ms, respectively))**.

Regarding claim 15, wherein the failure notification time **(see Shinomiya; paragraph 0106; "failure notification")** of the network node is smaller than a predetermined time **(see Shinomiya; paragraph 0106; figure 10; In FIG. 10, there are shown a failure location 61; a node 62 which can detect this**

failure; an upper limit value 63 of the restoration time which was specified by the user; the shortest reception time 64 of a failure notification message calculate from both a message transmission delay in a communication link).

Regarding claim 16, wherein the alternative communication path **(see Shinomiya; "protecting route having a spare communication capacity")** allows to share an auxiliary communication capacity for other network failure **(see Shinomiya; abstract; "The protecting route design method includes the steps of searching a protecting route which can minimize a transfer time of the failure notification message from the failure detection node; and then, updating the searched protecting route to a protecting route having a spare communication capacity sharable for a different failure and having a route switchover time to be completed within a given time limit")**.

Regarding claim 17, wherein the failure notification time **(i.e. transfer time of the failure notification message; see Shinomiya; paragraph 0011; "the transfer time of the failure notification message from the failure detection node")** is calculated **(see Shinomiya; paragraph 0011; "is calculated")** as a sum **(see Shinomiya; paragraph 011; "from a summation")** of a propagation delay time of a communication link between the network nodes **(i.e. transmission delay time; see Shinomiya; paragraph 011; "transmission delay time of the failure notification message being transmitted on communication links")** and a processing time **(see Shinomiya; paragraph**

0011; "processing time") for inputting/outputting the failure notification message in the each network node **(see Shinomiya; paragraph 0011; "an input and output processing time of the failure notification message processed in each node")**.

Regarding claim 18, further comprising calculating a recovery time **(see Shinomiya; paragraph 0043; "switchover time")** of the communication path **(see Shinomiya; "communication route switchover")** as a sum of the failure notification time of the first network node **(see Shinomiya; paragraph 0106; "shortest reception time 64 of the failure notification message")**, a switching time of each network node on the alternative communication path **(see Shinomiya; paragraph 0196; "restoration time")**, and a propagation delay of a signal to be transferred **(see Shinomiya; paragraph 0120; propagation delay is comprised in the "failure notification message")**.

Shinomiya is silent in respect to:

Regarding claim 13, selecting a first network node based on the failure notification time, out of the network nodes that are positioned in the current communication path on upper stream from the location of the network failure; and determining an alternative communication path that includes the first network node and a second network node out of the second path network nodes, the second network node being positioned in the current communication path on the down stream from the location of the network failure.

Regarding claim 14, a "first network node".

Regarding claim 15, a "first network node".

Shinomiya is not silent in respect to:

Regarding claim 13, selecting a first network node (see Fujii; "3.4.1 Alternate Route-Search Phase"; "chooser node") based on the failure notification time **(see Fujii; page 1032 "Integrated Network Design Method";"Out method for spare capacity assignment assumes that the restoration algorithm selects in the case of a failure a route requiring the shorts time", thus shortest failure notification time)**, out of the network nodes (see Fujii; figure 3; chooser node is selected out of a plurality of network nodes) that are positioned in the current communication path (see Fujii; figure 3; chooser node is in the communication path) on upper stream (see Fujii; page 1030 "3.4.1 Alternate Route-Search Phase", "upstream" sending the "OTS-BDI" which "acts as a trigger for the restoration path" for the "chooser node", thus "chooser node" is located upstream) from the location of the network failure (see Fujii; figure 3; the sender node sends the "OTS-BDI" message and is located downstream of the "chooser node" which is located upstream of the "sender node"); and determining an alternative communication path (see Fujii; page 1030 "3.4.1 Alternate Route Search Phase"; "the destination node for establishing the alternate path is called chooser node") that includes the first network node (see Fujii; figure 3; page 1030 "3.4.1 Alternate Route Search Phase"; first node is "chooser node") and a second network node (see Fujii; figure 3; page 1030 "3.4.1 Alternate

Route Search Phase"; second node is "sender node") out of the <u>second path</u> network nodes (see Fujii; figure 3; the chooser and sender nodes are selected out of a plurality of nodes), the second network node (see Fujii; figure 3; "sender node") being positioned in the current communication path (see Fujii; figure 3; "sender node" is on communication path) on <u>the</u> down stream from the location of the network failure (see Fujii; figure 3; the sender node sends the "OTS-BDI" message and is located downstream of the "chooser node" which is located upstream of the "sender node", therefore sender node is located "downstream").

Regarding claim 14; a "first network node" (see Fujii; figure 3; "3.4.1 Alternate Route-Search Phase"; "chooser node" is selected out of a plurality of network nodes)

Regarding claim 15; a "first network node" (see Fujii; figure 3; "3.4.1 Alternate Route-Search Phase"; "chooser node" is selected out of a plurality of network nodes)

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Shinomiya, as taught by **Fuji**, thereby addressing issues to the restoration function **(see Fuji; abstract)** as the sturdiness of WDM networks is an important factors, since WDM networks carry a large amount of information and a network failure would cause severe damage **(see Fuji; page 1028 "1. Introduction")**.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADAM DUDA whose telephone number is (571)270-5136. The examiner can normally be reached on Mon. - Fri. 9:30 a.m. - 7:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang B. Yao can be reached on (571) 272 - 3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/ADAM DUDA/

Examiner, Art Unit 2416

/Kwang B. Yao/

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